REMARKS

The Office Action mailed on April 30, 2009 has been carefully considered. The following remarks are believed sufficient to place the present application in condition for allowance. Reconsideration is respectfully requested.

Claims 216, 219-233, 236, 238-244, 246, 249-255, 257-263, and 265-266, 269-270, and 273-277 are currently pending. Claims 221, 223-224, 229-232, 249, and 251-252 have been cancelled without prejudice. Applicants reserve the right to prosecute claims 221, 223-224, 229-232, 249, and 251-252 at a later time.

Claims 216, 219-220, 222, 225-228, 233, 236, 238-244, 246, 250, 253-255, 257-263, 265-266, 269-270 and 273-277 stand rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,760,871 ("Kosoburd") in view of USPUB20040156014 ("Piers 2004"). Claims 216, 219-225, 227-230, 233, 236, 238-244, 246, 249-253, 257, 259-263, 265-266, 269-270 and 273-277 stand rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,800,532 ("Lieberman") in view of Piers 2004. Applicants traverse these rejections for the following reasons.

Claims 231-232 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lieberman in view of USPUB 20020122153 ("Piers 2002"). Claims 221, 223-224, 229-232, 249, and 251-252 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kosoburd in view of Piers 2002. Applicants traverse these rejections; however, in order to advance prosecution, claims 221, 223-224, 229-232, 249, and 251-252 have been cancelled without prejudice.

At the outset, Applicants wish to point out that "Piers 2004", cited by the current Office Action, is the publication of Applicants' own currently pending application. Thus, Piers 2004 is not prior art under 35 U.S.C. 102, since it clearly does not predate Applicants' date of invention or Applicants' filing date. Since Piers 2004 in not prior art under 35 U.S.C. 102, Applicants respectfully assert that the use of Piers 2004 in the current rejection under 35 U.S.C. 103 is improper.

Claims 216, 219-220, 222, 225-228, 233, 236, 238-244, 246, 250, 253-255, 257-263, 265-266, 269-270, and 273-277 Are Patentable Over Kosoburd and Piers 2004.

Kosoburd does not disclose all the elements of independent claim 216. For example, as admitted in the current Office Action, Kosoburd does not disclose an intraocular lens having a negative spherical aberration. To the contrary, Kosoburd discloses a lens having an aspheric surface operative to compensate for optical aberrations, which are typical of spherical surfaces, especially near the edge of the lens. *Kosoburd, column 16, lines 18-23*. A typical lens with spherical surfaces would cause spherical aberrations, especially at the edge of such a lens – as suggested by Kosoburd. By referring to such spherical surfaces in reference to "the lens", Kosoburd makes clear that it is a self-correcting lens that is being disclosed. Thus, rather than disclosing a lens having a negative spherical aberration, as required by claim 216, Kosoburd instead discloses a lens structured to compensate for optical aberrations *of the lens itself*.

Regarding lens structure, Kosoburd also describes a lens having a curvature according to an equation (10) for calculating a distance from the center of the lens that depends on the curvature of the lens at its center and on aspheric parameters "k" and "b_n". *Kosoburd, column 16, lines 33-39*. However, Kosoburd does not provide specific parameter values for Equation (10). Thus, Kosoburd is here silent regarding a lens structure having a negative spherical aberration, as required by claim 216. Even if the parameters could be selected to provide a negative spherical aberration according to claims 216, MPEP 2112, IV notes that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

Additionally, Kosoburd discloses a lens with posterior aspheric surface that is shaped in accordance with the aspheric surface of the human cornea. *Kosoburd, column 16, lines 23-26*. However, Kosoburd does not here disclose any specific lens shape, much less a lens shape having a negative spherical aberration, as required by claim 216.

Furthermore, Kosoburd does not disclose an intraocular lens comprising a surface having a shape configured to reduce a positive spherical aberration of a *wavefront* passing through the lens, as additionally required by claim 216. Rather, as described above, Kosoburd discloses a lens that compensates for optical aberrations of the lens itself. *Kosoburd, column 16, lines 18-23*. Kosoburd does not even suggest that such a compensated lens would reduce aberrations of an

external wavefront incident upon the lens, and certainly does not disclose or suggest reducing a positive spherical aberration of a wavefront passing through the lens, as required by claim 216.

At least for reasons similar to those discussed above with regard to claim 216, Kosoburd does not disclose all the elements of independent claim 244. In addition, Kosoburd does not disclose additional limitations recited in claim 244. For example, Kosoburd does not disclose an intraocular lens with a surface having an 11th term of a fourth order with a Zernike coefficient that is negative. Furthermore, Kosoburd does not disclose an intraocular lens configured such that the intraocular lens reduces a positive rotationally symmetric fourth order Zernike term of a Zernike polynomial of a wavefront.

The Office Action asserts that the limitations regarding the Zernike polynomials and the lens being characterized by conical equations are inherently met because the Zernike polynomials describe spherical aberrations which are reduced and Figure 4C shows a partially conical shape which may be described by such equations. In this regard, MPEP 2112, IV notes that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

Furthermore, it is unclear which specific limitations of the pending claims that the Office Action is asserting are inherently disclosed in Kosoburd. Applicants request the Office be more specific in what is being asserted and provide a basis in fact and/or technical reasoning to reasonably support the determination that such allegedly inherent characteristics necessarily flow from the teaching of the applied prior art, as required by MPEP 2112, section IV.

In an effort to respond to the best of our understanding, and without limiting the Examiner's obligation to support his inherency assertions and to provide clarity in his rejection, we offer the following.

Regarding FIG. 4C of Kosoburd, Applicants respectfully disagree with the apparent assertion that it necessarily shows a partially conical shape, much less a shape that inherently meets the limitations of claims 216 and/or 244. First, Kosoburd does not indicate that the drawing in FIG. 4C is to scale. In addition, regarding surfaces 22, 26 shown in FIG. 4C, Kosoburd does not specifically disclose that these surfaces, as shown in FIG. 4C, are "partially conical shape." However, even if surfaces 22 or 26 shown in FIG. 4C were a "partially conical shape", Kosoburd still does not disclose, or even suggest, that the surface shapes shown in FIG. 4C, or anywhere else in Kosoburd,

are configured to reduce any aberrations or Zernike terms of a wavefront passing through the lens. More specifically, Kosoburd does not disclose, or even suggest, a lens having a shape configured to reduce a positive spherical aberration (as in claim 216) or a lens configured to reduce a rotationally symmetric fourth order Zernike term of a wavefront passing through the lens (as in claim 244).

Regarding the assertion that Zernike polynomials describe spherical aberrations which may be reduced, Applicants assert that even if a Zernike polynomials were usable to describe spherical aberrations of a wavefront that may be reduced, it does not follow that the Zernike polynomial terms or the aberrations they "describe" necessarily are reduced. Claim 216 specifically requires a surface having a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens, while claim 244 specifically requires an intraocular lens that reduces a positive rotationally symmetric fourth order Zernike term of a Zernike polynomial of a wavefront. The assertions made by the Office Action on this point appear to miss the fact that Kosoburd does not disclose a lens that reduces either a positive spherical aberration of a wavefront or a positive rotationally symmetric fourth order Zernike term of a wavefront.

Kosoburd also does not disclose limitations of various claims depending from independent claims 216 or 244. For example, Kosoburd does not disclose an intraocular lens designed to reduce wavefront aberrations of light passing into the eye when the intraocular lens has replaced a natural lens of an eye, as required by claim 228. As discussed above, Kosoburd discloses a lens that compensates for aberrations of the lens itself, but does not disclose reducing aberrations of a wavefront. *Kosoburd, column 16, lines 18-23.* More specifically, in the case of claim 228, Kosoburd does not disclose a lens configured to reduce wavefront aberrations of light passing into the eye. As is generally known in the art, and as specifically disclosed within the specification of the pending application, light passing into an eye passes through an aspheric cornea (e.g., see paragraphs [0048] – [0050] of the '014 publication and new claims 274-276). By contrast, the lens of *Kosoburd column 16, lines 18-23* compensates for optical aberrations which are typical of spherical surfaces. Thus, this section of Kosoburd cannot refer to reduction of wavefront aberrations of light passing into the eye, at least because the cornea is typically aspheric and this section of Kosoburd is directed to compensation of optical aberrations which are typically of spherical surfaces.

Nor does Kosoburd disclose an intraocular lens that deviates sufficiently from being a spherical lens to compensate for corneal aberrations, as required in claim 273. Nor does Kosoburd disclose an intraocular lens comprising a surface with a shape having an aspheric component configured to reduce a positive spherical aberration produced by an aspheric cornea having an aspheric corneal surface, as required by claim 274, for example, wherein the corneal surface is characterized by an equation having a conic constant of the corneal surface, the conic constant having a value between -1 and 0, or of -0.26, as required by claims 275 and 276, respectively. Similarly, Kosoburd does not disclose an intraocular lens wherein a Zernike coefficient of a lens surface is configured to balance a positive value of corresponding coefficient term of a Zernike polynomial that characterizes the cornea, as required by claim 277.

In addition, Kosoburd does not disclose light distribution between a base focus and an additional focus being 50%:50%, as required by claims 226 and 254. Rather, Kosoburd is primarily directed to lenses having a diffractive profile that produces three dominant diffraction orders operative to focus incident light in accordance with three different foci, the incident light energy being distributed substantially evenly among the three diffraction orders. *Kosoburd, column 8, lines 56-67.*

As pointed out above herein, Piers 2004 is not prior art under 35 U.S.C. 102. Thus, the use of Piers 2004 in the current rejection under 35 U.S.C. 103 is improper. Indeed, paragraph [0017] cited in the current Office Action specifically states that "a bifocal intraocular lens according to the present invention" is what Applicants' FIG. 2 is showing. As found throughout Applicants' specification, the improved Modulation Transfer Function over a "conventional bifocal lens" shown in FIG. 2 is the result of various limitations recited in independent claims 216 and 244.

At least because Kosoburd does not disclose all of the limitations of claim 216 or 244, and because Piers 2004 is not prior art to Applicants' application, Applicant requests the Examiner allow claim 216 and 244. Claims 219-220, 222, 225-228, 233, 236, 238-243, 246, 250, 253-255, 257-263, 265-266, 269-270, and 273-277 depend from claim 216 or 244 and further define the invention of claims 216 or 244. Thus, claims 219-220, 222, 225-228, 233, 236, 238-243, 246, 250, 253-255, 257-263, 265-266, 269-270, and 273-277 are patentable over Kosoburd at least for

the same reasons that claims 216 and 244 are patentable thereover, and are patentable in their own right as well.

Claims 216, 219-220, 222, 225, 227-228, 233, 236, 238-244, 246, 249-250, 253, 257, 259-263, 265-266, 269-270, and 273-277 Are Patentable Over Lieberman and Piers 2004.

At least for reasons discussed above in relation to Kosoburd, Lieberman also does not disclose all the elements of independent claim 216. For example, Lieberman does not disclose an intraocular lens having a negative spherical aberration. Nor does Lieberman disclose an intraocular lens comprising a surface having a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens. Indeed Lieberman is silent regarding correction of aberrations of either an incident wavefront or even of the lens itself. Similarly, Lieberman is silent regarding lens structures suitable for reducing such aberrations. In fact, Lieberman seemingly teaches away from reducing spherical aberrations (which are symmetrical) by disclosing a lens requiring a lens having an asymmetric optical power. Lieberman, column 1, lines 8-11.

In addition, at least for reasons discussed above in relation to Kosoburd, Lieberman does not disclose all the elements of independent claim 244. For example, Lieberman does not disclose an intraocular lens with a surface having an 11th term of a fourth order with a Zernike coefficient that is negative. Furthermore, Lieberman does not disclose an intraocular lens that is configured such that a positive Zernike term of a cornea, corresponding to the 11th term of the lens surface, is reduced for at least one of the foci of the intraocular lens. In addition, Lieberman clearly does not disclose an intraocular lens that reduces a positive rotationally symmetric fourth order Zernike term of said Zernike polynomial of the wavefront, as recited in claim 244. Indeed, the invention of Lieberman directed to bifocal intraocular lenses in which a segment of relatively greater optical power is disposed along a peripheral portion in an asymmetric manner. Lieberman, column 1, lines 8-11.

Lieberman also does not disclose limitations of various claims depending from claims 216, 244. For example, Lieberman does not disclose an intraocular lens designed to reduce wavefront aberrations of light passing into the eye when the intraocular lens has replaced a natural lens of an eye, as required by claim 228. Indeed, the disclosure of Lieberman regarding aberrations is silent about reduction of aberrations of incident wavefronts, much less reduction of aberrations of light

passing into an eye. Furthermore, Lieberman does not disclose an intraocular lens that deviates sufficiently from being a spherical lens to compensate for corneal aberrations, as required in claim 273. Nor does Lieberman disclose an intraocular lens comprising a surface with a shape having an aspheric component configured to reduce a positive spherical aberration produced by an aspheric cornea having an aspheric corneal surface, as required by claim 274, for example, wherein the corneal surface is characterized by an equation having a conic constant of the corneal surface, the conic constant having a value between -1 and 0, or of -0.26, as required by claims 275 and 276, respectively. Similarly, Lieberman does not disclose an intraocular lens wherein a Zernike coefficient of a lens surface is configured to balance a positive value of corresponding coefficient term of a Zernike polynomial that characterizes the cornea, as required by claim 277.

As pointed out above herein, Piers 2004 is not prior art under 35 U.S.C. 102. Thus, the use of Piers 2004 in the current rejection under 35 U.S.C. 103 is improper. Indeed, paragraph [0017] cited in the current Office Action specifically states that "a bifocal intraocular lens according to the present invention" is what Applicants' FIG. 2 is showing. As found throughout Applicants' specification, the improved Modulation Transfer Function over a "conventional bifocal lens" shown in FIG. 2 is the result of various limitations recited in independent claims 216 and 244.

At least because Lieberman does not disclose all of the limitations of claim 216 or 244, and because Piers 2004 is not prior art to Applicants' application, Applicant requests the Examiner allow claim 216 and 244. Claims 219-220, 222, 225, 227-228, 233, 236, 238-243, 246, 249-250, 253, 257, 259-263, 265-266, 269-270, and 273-277 depend from claim 216 or 244 and further define the invention of claims 216 or 244. Thus, claims 219-220, 222, 225, 227-228, 233, 236, 238-243, 246, 249-250, 253, 257, 259-263, 265-266, 269-270, and 273-277 are patentable over Lieberman at least for the same reasons that claims 216 and 244 are patentable thereover, and are patentable in their own right as well.

CONCLUSION

For the foregoing reasons, Applicants respectfully assert that the claims now pending are allowable over the prior art of record. Therefore, Applicants earnestly seek a notice of allowance and prompt issuance of this application.

The Commissioner is hereby authorized to charge payment of any fees associated with this communication to Deposit Account No. 502317.

Respectfully submitted,
Advanced Medical Optics

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